

# Insectes Sociaux

Index  
Vol. 42  
1995

N HMLTN  
QL 496 .I4  
Insectes sociaux  
v 42 : index. 00/00/1995  
Received: 01-10-96  
UNIVERSITY OF HAWAII  
AT MANOA -- LIBRARY

# Insectes Sociaux

Official Journal of the International Union for the Study of Social Insects

## Editor-in-Chief:

Prof. J. Billen  
Zoological Institute  
University of Leuven  
Naamsestraat 59  
B-3000 LEUVEN (Belgium)

## Assistant Editors:

Prof. R. L. Jeanne  
Department of Entomology  
University of Wisconsin  
1630, Linden Drive  
MADISON, WI 53706 (U.S.A.)

Prof. L. Passera  
Laboratoire d'Ethologie et  
Psychologie animale  
Université Paul-Sabatier  
118, route de Narbonne  
F-31062 TOULOUSE (France)

## Founded by

P. P. Grassé and K. Gösswald in 1952

## Editorial Board:

A. Buschinger (Darmstadt, Germany)  
R. M. Crewe (Johannesburg, S. Africa)  
R. H. Crozier, (Bundoora, Australia)  
R. Gadagkar (Bangalore, India)  
W. D. Hamilton (Oxford, England)  
B. Hölldobler (Würzburg, Germany)  
P. E. Howse (Southampton, England)

Y. Itô (Okinawa, Japan)  
P. Jaisson (Villetaneuse, France)  
W. E. Kerr (Uberlândia, Brasil)  
R. H. Leuthold (Berne, Switzerland)  
C. D. Michener (Lawrence, U.S.A.)  
C. Noirot (Dijon, France)  
J. M. Pasteels (Brussels, Belgium)

J. Tengö (Uppsala, Sweden)  
W. R. Tschinkel (Tallahassee, U.S.A.)  
S. Turillazzi (Florence, Italy)  
H. H. W. Velthuis (Utrecht, Netherlands)  
M. J. West-Eberhard (San José, Costa Rica)  
E. O. Wilson (Cambridge, U.S.A.)

## Copyright

It is a fundamental condition that submitted manuscripts have not been published and will not be simultaneously submitted or published elsewhere. By submitting a manuscript, the authors agree that the copyright for their article is transferred to the publisher if and when the article is accepted for publication. The copyright covers the exclusive rights to reproduce and distribute the article, including reprints, photographic reproductions, microfilm, or any other reproductions of similar nature, and translations.

No material published in this journal may be reproduced photographically or stored on microfilm, in electronic data bases, video disks, etc., without first obtaining written permission from the publisher: Birkhäuser Verlag, P.O. Box 133, CH-4010 Basel/Switzerland.

**For users in the USA.** Copying done for any other than personal or internal reference use without the express permission of Birkhäuser Basel is prohibited. Where necessary, permission is granted by the copyright owner to libraries and others registered with the Copyright Clearance Center (CCC) to photocopy any article herein for the basic fee of \$1.50 per copy plus 0.20 for each page reproduction. Payments should be sent directly to the CCC, 21 Congress St., Salem, MA 01970.

**For users in Germany.** All rights reserved (including those of translation into foreign languages). No part of this journal may be reproduced in any form – by photograph, microfilm, or any other means – nor transmitted or translated into a machine language without the written permission of the publisher. Only single copies of contributions, or parts thereof, may be reproduced for personal use. Copies reproduced and used for other than private purposes in an industrial or commercial undertaking are subject to copyright and, in such cases, a copyright fee must be paid to the VG WORT, Abteilung Wissenschaft, Goethestrasse 49, 80336 München, from whom conditions of payment can be obtained on request.

## Subscription Information

This journal appears in 1 volume per year, 4 issues per volume

Annual subscription\* sFr. 348.–/DM 408.–/US\$ 232.00

Single issue sFr. 98.–/DM 118.–/US\$ 68.00

\* postage not included

Subscription orders should be placed with **Birkhäuser Verlag, P.O. Box 133, CH-4010 Basel/Switzerland** or through your bookseller or subscription agency.

Airmail delivery surcharge rates are available on request. Claims for undelivered issues must be made promptly – at the very latest, immediately following receipt of the issue succeeding the missing number. No cancellations are accepted for the calendar year once subscription has been entered. Cancellation of standing orders must be effected 3 months before the end of the publishing year.

For membership dues including membership subscriptions for the International Union for the Study of Social Insects (IUSSI) please contact:

Dr. M. Breed  
Environmental, Population and Organismal Biology  
Campus Box 334  
University of Colorado  
Boulder, CO 80309  
USA

## Abstracted/Indexed in:

Cambridge Scientific Abstracts, C.A.B.  
International Current Awareness, Biological Abstracts,  
BIOSIS, Chemical Abstracts, Current Contents, CABS  
Animal Behaviour Abstracts, Entomology Abstracts

© 1995 Birkhäuser Verlag, Basel/Boston/Berlin

Printed in Germany on acid-free paper produced from chlorine-free pulp

ISSN 0020-1812

# Author Index

---

- vilés, L., 287
- ignell, D.E., 57
- onavita-Cougourdan, A., 347
- ørgesen, L.W., 103, 397
- uschinger, A., 219
- utts, D.P., 45
- amann, M.A., 45
- lément, J.L., 347
- ollins, A.M., 113
- oster-Longman, C., 1
- D'Ettorre, P., 279
- le Bruijn, L.L.M., 123
- Dejean, A., 129
- Duchateau, M.J., 255
- Eggleton, P., 57
- Elmes, G.W., 303
- Espelie, K.E., 45
- Fourcassié, V.J.L., 249
- Freitas, A.V.L., 453
- Gabouriaut, G., 385
- Garnier-Sillam, E., 167
- Gathorne-Hardy, F., 359
- Habersetzer, C., 385
- Harry, M., 167
- Hasegawa, E., 137, 187, 337
- Hashimoto, Y., 137
- Hefetz, A., 267
- Heinze, J., 309
- Henschel, J.R., 419
- Hogendoorn, K., 427
- Hölldobler, B., 309
- Holway, D.A., 329
- Hunt, J.H., 223
- Imperatriz-Fonseca, V.L., 71
- Jaffe, K., 157
- Jeanne, R.L., 223
- Jensen, P.V., 103, 397
- Jones, D.T., 359
- Keeping, M.G., 223, 317
- Kettler, R., 145
- Kleespies, R.G., 219
- Le Moli, F., 279
- Leuthold, R.H., 145
- Lubin, Y.D., 419
- Mariën, J., 255
- Mead, F., 385
- Meskali, M., 347
- Mori, A., 279
- Noirot, C., 321
- O'Donnell, S., 17
- Pankiw, T., 371
- Pasteels, J.M., 31
- Pettis, J.S., 113
- Provost, E., 347
- Queller, D.C., 379
- Quinet, Y., 31
- Reichardt, A.K., 449
- Robertson, H.G., 411
- Rowell, D.M., 287
- Ruelle, J.E., 129
- Schneider, J., 419
- Schneider, J.M., 237
- Schumann, R.D., 219
- Schwarz, M.P., 201
- Silberbauer, L.X., 201
- Slessor, K.N., 371
- Solis, C.R., 379
- Sommeijer, M.J., 123
- Soroker, V., 267
- Strassmann, J.E., 379
- Traniello, J.F.A., 249
- Trenkle, S., 309
- Tsuji, K., 333
- Turillazzi, S., 1
- van Benthem, F.D.J., 71
- Velthuis, H.H.W., 71, 427
- Vienne, C., 267
- Wardlaw, J.C., 303, 325
- Wheeler, D.E., 449
- Whitehouse, M.E.A., 157
- Winston, M.L., 113, 371
- Yamaguchi, T., 89, 187
- Yamauchi, K., 137, 333



# Subject Index

- Africanized, 113  
Alarm pheromone, 317  
Alarm response, 145  
Alkalinity, 57  
Allodapini, 201  
Anaesthesia, 325  
Ants, 31, 89, 157, 187, 279, 325, 449  
*Apis mellifera*, 113, 371  
*Apoica*, 223
- Bees, 201  
Behavioral flexibility, 385  
Behavior, 453  
*Belonogaster*, 317  
Biodiversity, 129  
*Bombus terrestris*, 255  
Building behaviour, 1
- Camponotus vagus*, 347  
Carbon dioxide, 325  
*Carebara vidua*, 411  
Caste determination, 427  
Cerambycidae, 333  
Chemical communication, 123, 347  
Colony foundation, 279  
Colony structure, 309  
Competition, 237  
Contact chemoreception, 347  
Cooperation, 287  
Copulation, 411  
Cuticle, 267  
Cuticular hydrocarbons, 45
- Defense, 317  
*Dichothorax*, 309  
Diploid males, 255  
Discriminant analysis, 45  
Division of labour, 71  
DNA polymorphism, 337  
Drone congregation area, 123
- Eggs, 325  
ELISA, 397  
Emigration, 419  
Ergatoid male, 137  
Ergatoid queen, 137  
Eusociality, 329, 379  
Evolution, 57  
*Exoneura bicolor*, 201
- Female choice, 419  
Fluorometry, 449  
Foraging, 17, 359  
Formicidae, 219, 267  
Foundation of societies, 129
- Genetic relatedness, 379  
Gregarinia, 219  
Guarding behaviour, 427  
Gut morphology, 57
- Hibernation, 385  
Hindgut, 57  
*Homoeusa acuminata*, 31  
*Hospitalitermes*, 359  
Humic compounds, 167
- Hunting social spider, 287  
Hydrocarbons, 267, 347  
Hymenoptera, 223, 427  
*Hypoconera*, 137
- Inbreeding, 419  
Intraspecific competition, 89  
Isoptera, 321
- Kin recognition, 157  
Kin selection, 427
- Larval secretions, 103  
*Lasius fuliginosus*, 31  
*Leptogenys propefalcigera*, 453  
*Leptothorax*, 219, 309  
Lichens, 359
- Macrotermes*, 145  
Male competition, 123  
Male rivalry, 419  
Mating, 255, 309  
Meliponinae, 123  
*Messor*, 89  
Mixed-species groups, 267  
Monogyny, 113  
*Monomorium pharaonis*, 397  
Myrmecophiles, 31  
*Myrmica*, 303
- Nest architecture, 1  
Nest founding, 385  
Nest material, 1  
Nestmate recognition, 45, 157, 347  
Nomadic behavior, 453
- Observations and behavioural evolution, 71  
Oniscid isopods, 453  
Operational sex ratio, 419  
Ovariole number, 411  
Oviposition, 103, 303
- Parental analysis, 337  
Parthenogenesis, 333  
Pathology, 219  
*Pheidole*, 329  
Pheromones, 157  
Phylogeny, 321  
*Plebeia remota*, 71  
*Polistes wasps*, 385  
Polistinae, 223, 317  
*Polyergus*, 187, 279  
Polyethism, 17  
Ponerinae, 137, 453  
Population structure, 287, 379  
Postpharyngeal gland, 267  
Preadaptation, 237  
Prey specialization, 453
- Queen, 303  
Queen attendance, 371  
Queen pheromone, 113, 371  
Queen rearing, 113
- Raiding behaviour, 187  
Rainforest, 129  
RAPD, 337  
Recruitment, 145  
Relatedness, 309  
Replete workers, 103  
Ritualized combat, 89
- Search behaviour, 249  
Sex allocation, 329  
Sex ratio, 287, 329  
Sexual behaviour, 123  
Size, 255  
Slave-raids, 187  
Slavery, 279  
Social evolution, 71  
Social regulation, 103, 397  
Social variation, 201  
Social wasps, 223  
Sociality, 201, 237  
Soil fauna, 129  
Soil-feeding termites, 167  
Specialization, 17  
Sperm counts, 449  
Sperm quantification, 449  
Sperm transfer, 411  
Spermatozoa, 255  
Spiders, 237  
Sporozoa, 201, 219  
Staphylinids, 31  
*Stegodyphus*, 237  
Stenogastrinae, 1  
Sternal glands, 321  
Stingless bees, 71  
Stomodaeal trophallaxis, 137  
Structural stability, 167  
Symbionts, 57
- Task partitioning, 17  
Technique, 249  
Termite columns, 359  
Termites, 129  
Territory, 89  
Thelytoky, 333  
Tolerance, 237  
Tracking, 249  
Trail pheromone, 31  
Trails, 359  
Trophic egg, 303  
Tropical rainforest, 167
- Venom, 317  
*Vespa crabro*, 45  
Vespidae, 223  
Video, 249
- Wasps, 379  
Weight, 103, 397  
Worker reproduction, 333  
Workers, 385
- Xylocopa*, 427  
Yolk protein, 397